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Structural Analysis *and* **Intelligent Engineering**



CRC Press

Taylor & Francis Group

New!

Fundamental Concepts of Earthquake Engineering

Roberto Villaverde

University of California-Irvine, USA

This comprehensive resource is a great aid to those professionals tasked with mitigating the effects of catastrophic earthquakes. It presents modern concepts and valuable procedures, code provisions, and seismic hazard assessment techniques used to make structures as earthquake-resistant as possible. The author details the main aspects and historical development of earthquake engineering with regard to various types and levels of damage. Detailing earthquake generation and propagation mechanisms, and scales used to quantify earthquake size and damage potential, this reference:

- Contains four chapters devoted to seismology and the latest seismic building codes
- Examines soil ground motion amplification and characterization, and soil-structure interaction
- Describes techniques for calculating seismic structural response and protecting structures from earthquakes
- Features numerous photographs, figures, and case studies to illustrate concepts
- Includes an appendix with a comprehensive list of the world's historical earthquakes

Catalog no. 64959, December 2008, 984 pp.

ISBN: 978-1-4200-6495-7, \$129.95 / £59.99



New!

Spatial Variation of Seismic Ground Motions

Modeling and Engineering Applications

Aspasia Zerva

Drexel University, Philadelphia, Pennsylvania, USA

Taking a multidisciplinary approach, this book provides coverage from seismological and engineering, deterministic and stochastic, as well as physical and mathematical points of view. The author describes the estimation of spatial variability from recorded data, its physical interpretation, and the development of spatial variability/coherency models. She uses random variation analysis to illustrate the effect of differential ground motions on the quasi-static and dynamic response of extended structures. Worked-out applications demonstrate the significance of seismic ground strains and differential motions on the seismic response of foundations, bridges, and dams.

Catalog no. 9929, January 2009, 496 pp.

ISBN: 978-0-8493-9929-9, \$139.95 / £73.99



Smart Structures

Innovative Systems for Seismic Response Control

Franklin Y. Cheng

University of Missouri, Rolla, USA

Hongping Jiang

Robertson-Ceco Corp., Oklahoma City, Oklahoma, USA

Kangyu Lou

Office of Statewide Health Planning & Development, Los Angeles, California



For those working in the field, this authoritative reference on rapidly evolving smart-structure technology addresses the ever-increasing need to stay abreast of the latest advances. Organizing current research and technology, this comprehensive resource on field developments features numerical procedures, design guidelines and examples based on current official codes. It considers smart structures on a variety of foundations, including those with passive or semi-active devices. This self-tutorial text emphasizes essential information on structural and mathematical formulations, mechanism of control systems, and numerical algorithms. It provides step-by-step numerical examples, that readers can use to interpret physical representations and understand formulae as they relate to applications. Each chapter comprehensively explores a specific topic, from current smart structure systems to case studies utilizing simulated earthquake data.

Catalog no. 8532, February 2008, 672 pp.

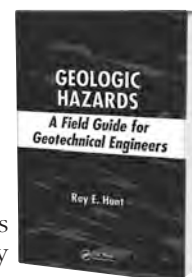
ISBN: 978-0-8493-8532-2, \$129.95 / £67.99

Geologic Hazards

A Field Guide for Geotechnical Engineers

Roy E. Hunt

Practicing Geotechnical Engineer, Bricktown, New Jersey, USA



Armed with this practical guide, engineers will have the information needed to properly recognize, understand, and design for various geologic hazards that might compromise safe and economical construction. Eminent expert Roy E. Hunt thoroughly examines the potential for slope failures and earthquakes, as well as ground subsidence, collapse, and expansion. Using a clear conceptual approach, he explains what measures are available to mitigate or eliminate the risks associated with each of these geologic hazards. The book sets forth the basis for recognizing, understanding, and treating geologic hazards, using general concepts rather than rigorous mathematical analyses. Hunt provides the foundation for determining the potential for surface movements and for preventing or controlling their effects. The section on earthquakes, details their causes, characteristics, and surface effects.

Catalog no. 52500, 2007, 323 pp.

ISBN: 978-1-4200-5250-3, \$89.95 / £48.99

Earthquakes and Acoustic Emission

Edited by

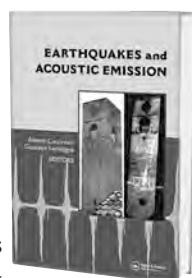
Alberto Carpinteri and
Giuseppe Lacidogna

*Politecnico di Torino, Department of Structural
Engineering and Geotechnics, Italy*

Outlining a variety of topics, this book brings together papers that discuss emerging findings and developments. It also presents actual achievements from around the world, especially those pertaining to the mechanics of materials and geophysics, and considers the role of acoustic emission monitoring with regard to heightening our theoretical and practical understanding of seismic events.

Catalog no. SW4020, January 2008, 209 pp.

ISBN: 978-0-415-44402-6, \$109.95 / £59.99



Geotechnical Investigation Methods

A Field Guide for Geotechnical Engineers

Roy E. Hunt

*Practicing Geotechnical Engineer, Bricktown, New Jersey,
USA*

An invaluable guide for those actually engaged in field work, this practical volume draws chapters from the second edition of Roy Hunt's revered **Geotechnical Engineering Investigation Handbook**. It describes how to select proper field instrumentation and details the methods required for exploring specific geologic environments and for measuring material properties.

Catalog no. 42742, 2007, 342 pp.

ISBN: 978-1-4200-4274-0, \$94.95 / £49.99



Characteristics of Geologic Materials and Formations

A Field Guide for Geotechnical Engineers

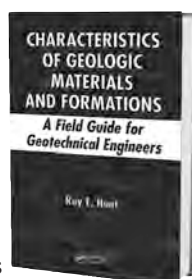
Roy E. Hunt

*Practicing Geotechnical Engineer, Bricktown, New Jersey,
USA*

Another handy guide for use in the field, this volume, drawn from Hunt's **Geotechnical Engineering Investigation Handbook**, describes rock and soil types in terms of their origin, mode of occurrence, and structural features in situ. It presents typical characteristics that are significant to the practicing engineer when considering both excavation and foundation work for both smaller projects and larger public works.

Catalog no. 42769, 2007, 387 pp.

ISBN: 978-1-4200-4276-4, \$94.95 / £49.99



Behaviour of Steel Structures in Seismic Areas

Edited by

Federico M. Mazzolani

University of Naples Federico II, Italy

Akira Wada

Tokyo Institute of Technology, Yokohama, Japan

This comprehensive review of recent developments in the field details progress in both theoretical and experimental research on the behaviour of steel structures in seismic areas. It discusses performance-based design of structures; seismic, wind, and exceptional load; material behavior; member, connection, and global behavior. Also covered are analytical and experimental methods, mixed and composite structures, passive and active control, strengthening and repairing, codification, design and fabrication, and practice.

Catalog no. SW8245, 2007, 885 pp.

ISBN: 978-0-415-40824-0, \$289.95 / £157.00



Engineered Rock Structures in Mining and Civil Construction

R. N. Singh

University of Nottingham, England

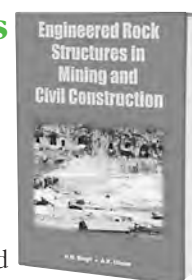
A. K. Ghose

Indian School of Mines, Dhanbad

Combining international perspectives in hard and soft rock mechanics, this book is built upon a synthesis of vast published and unpublished research work. Developing insight into both the theory and practice of rock mechanics, this material focuses on practical application of theory to give designers more tools to enhance state-of-the-art design for engineered rock structures.

Catalog no. SW0139, 2006, 536 pp.

ISBN: 978-0-415-40013-8, \$199.95 / £104.50



Environmental Vibrations Prediction, Monitoring, Mitigation and Evaluation ISEV2005

Edited by

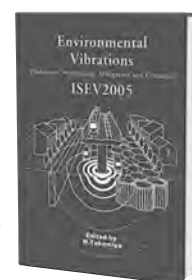
H. Takemiya

*Okayama University, Department of Environmental and
Civil Engineering, Japan*

The ISEV conference in Japan focused on prediction, control, and mitigation of environmental vibrations caused by all forms of traffic, construction activities, factory operations, and other manmade sources to improve the operation of sensitive machines in high-tech production. This record details the exchange between eminent international academics and engineering specialists in topical areas of environmental vibrations and related fields.

Catalog no. SW0354, 2006, 658 pp.

ISBN: 978-0-415-39035-4, \$199.95 / £109.50



Earthquake Engineering for Structural Design

Edited by
W.F. Chen
University of Hawaii, Honolulu, USA

E.M. Lui
Syracuse University, New York, USA

Featuring chapters from the second edition of the best-selling **Handbook of Structural Engineering**, this is a tightly focused guide to the theoretical, practical, and computational aspects of earthquake engineering. It discusses the fundamentals of earthquake engineering, the various types of earthquake damage to structures, seismic design of buildings and bridges, and performance-based seismic design and evaluation of building structures.

Catalog no. 7234, 2006, 264 pp.
ISBN: 978-0-8493-7234-6, \$99.95 / £53.99



Wind and Earthquake Resistant Buildings Structural Analysis and Design

Bungale S. Taranath, Ph.D., S.E.
DeSimone Consulting Engineers PLLC, San Francisco, California, USA

"...fills an important need in the education of modern structural engineers..."

— Engineering Structures

This book covers a broad range of topics, including wind effects, seismic design, traditional and novel types of bracing systems, and the restoration of damaged or seismically vulnerable buildings. It clearly elucidates the behavior of steel, concrete, and composite building structures.

Catalog no. DK2447, 2005, 912 pp.
ISBN: 978-0-8247-5934-6, \$149.95 / £79.00



Bestseller!

Earthquake Engineering From Engineering Seismology to Performance-Based Engineering

Edited by
Yousef Bozorgnia
Pacific Earthquake Engineering Research Center (PEER), University of California, Berkeley, USA

Vitelmo V. Bertero
University of California, Berkeley, California, USA

Various expert contributors comprehensively cover earthquake engineering problems and review traditional methods and scientific background on field developments. They discuss computer methods on structural analysis and present design methodologies for professionals and researchers. This book reviews seismic-resistant design through supplemental damping and structural control, and important advances in earthquake ground motion characteristics, behavior and design of structures, seismic design of non-structural systems, and more.

Catalog no. 1439, 2004, 976 pp.
ISBN: 978-0-8493-1439-1, \$199.95 / £109.00



New!

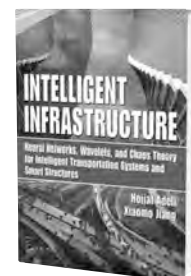
Intelligent Infrastructure Neural Networks, Wavelets, and Chaos Theory for Intelligent Transportation Systems and Smart Structures

Hojjat Adeli
Ohio State University, Columbus, USA

Xiaomo Jiang
GE-Energy, Greenville, South Carolina, USA

Experts estimate that in the next 20 years, the United States will require \$1.6 trillion dollars to rehabilitate, replace, and maintain existing civil infrastructure systems. This presentation of a new vision for design and management of U.S. infrastructure introduces novel technologies, multidisciplinary methodologies, and detailed computational algorithms for creating smart structures and intelligent highways. Addressing health, monitoring and nonlinear active control of tall structures that are subject to dynamic loading, such as those affected by wind or earthquakes, this book delineates a modern and futuristic approach that bridges structural and transportation engineering. An exploration of the advanced computing technologies vital to creating an effective smart structure technology, this is a unique treatise on how to attack and solve the complex and intractable problems resulting from emerging smart structures and intelligent transportation systems.

Catalog no. 85360, October 2008, 440 pp.
ISBN: 978-1-4200-8536-5, \$159.95 / £84.00



New!

Historic Bridges Evaluation, Preservation, and Management

Edited by
Hojjat Adeli
Ohio State University, Columbus, USA

Perhaps more than any other engineered structures, bridges represent the height of resourcefulness both in their design and their use of materials. Stone, brick, timber, wrought iron, steel, and concrete have all been effectively employed in a myriad of structural forms, many of which still stand as testimony to the brilliance of bridge designers throughout the history of civilization, from ancient China to the modern-day United States. This work provides both an admiring and detailed technical assessment of bridge engineering by exploring several remarkable examples and detailing the evolution of bridge design. Demonstrating historic significance beyond their utilitarian function, the bridges encountered in these pages are true landmarks, as worthy of emulation as they are preservation.

Catalog no. 79956, April 2008, 304 pp.
ISBN: 978-1-4200-7995-1, \$129.95 / £67.99

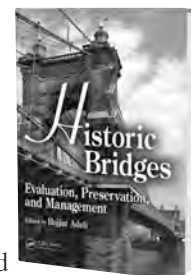


Plate Buckling in Bridges and Other Structures

Björn Åkesson

Consulting Engineer, Fagersta, Sweden

This well-illustrated and comprehensive review of local buckling in bridges covers theory, background, and simple design calculations relevant to this intriguing phenomenon, analyzing successful attempts to intercede in the buckling process. But because examination of failures provides valuable information about the phenomenon of buckling, this text also presents several failure case studies, including five bridge collapses that occurred in a four-year-period between 1969 and 1973. With a highly visual and descriptive style that will be especially useful for practicing civil and structural engineers and advanced-level undergraduate and graduate students, this book provides easy-to-follow design examples that conform to the latest Eurocode, and it takes a special look at thin-walled plated bridge girders.

Catalog no. SW1956, 2007, 164 pp.

ISBN: 978-0-415-43195-8, \$73.95 / £40.99



New!

Structural Analysis of Historic Construction Preserving Safety and Significance

Edited by

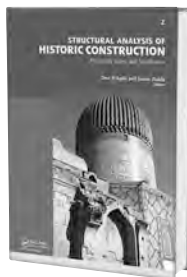
Dina D'Ayala and Enrico Fodde

University of Bath, Department of Architecture and Civil Engineering, England

Successful preservation of a historic building, complex, or city depends on its continued use, daily care, and adaptation to modern standards and practices of living. Conservation engineers must understand, interpret, and manage architectural heritage to safely deliver it to posterity, enhancing private or public utility by working toward minimum loss of fabric and significance. These two objectives are sometimes conflicting, and with growing global interest in conservation engineering, more inclusive definitions of significance and better-articulated safety concepts and technologies must be determined. This collection of over 250 papers inspired by an international conference presents the latest findings on preservation in diverse cultural circumstances.

Catalog no. SW8728, July 2008, 1588 pp.

ISBN: 978-0-415-46872-5, \$299.95 / £149.95



New!

Understanding Bridge Collapses

Björn Åkesson

Consulting Engineer, Fagersta, Sweden

Structural engineering has certainly evolved, but there is still much to be learned about the extraordinarily complex phenomena of fatigue and buckling. Because much of today's understanding is based on past failures, consulting engineers and advanced students of structural and bridge engineering will appreciate this richly illustrated and detailed analysis of 20 historic bridge collapses that elucidates the theory, related phenomena, and mathematical theories related to each example. This book presents failure analyses and reinforces them with accepted explanations and, in some cases, new theories to describe the gradual development of bridge types used and choice of construction material. The chronological order of events and gradual development of ideas will have a positive effect on engineers' acceptance and visualization of essential mathematical theories.

Catalog no. SW6230, July 2008, 276 pp.

ISBN: 978-0-415-43623-6, \$89.95 / £49.99



New!

Pavement Engineering Principles and Practice

Rajib B. Mallick

CEE Department, WPI, Worcester, Massachusetts, USA

Tahar El-Korchi

Waban, Massachusetts, USA

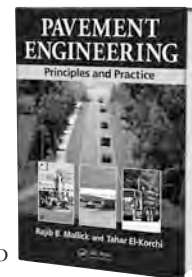
From soil preparation and compositions to structural design, load implications, and rehabilitation, this reference covers the full range of core principles and application needed to understand pavement engineering. The first section discusses the selection of materials, mix and structural design, and construction applications, as well as life-cycle costing. The second part delves into laboratory and field tests and looks at emerging concepts regarding materials, design, and analysis.

- Places and emphasis on pavement evaluation and rehabilitation techniques
- Examines ground-penetrating radar and seismic testing
- Includes examples, problems, laboratory tests,
- Covers concrete and asphalt pavement engineering
- Addresses environmental and green engineering concerns

A solutions manual is available for instructors wishing to adapt the book for course use

Catalog no. 60295, September 2008, 520 pp.

ISBN: 978-2-4200-6029-4, \$119.95/ £44.99



Dam Break Modelling, Risk Assessment and Uncertainty Analysis for Flood Mitigation

Migena Zagonjoli

UNESCO/IHE Institute for Water Education, Delft, The Netherlands

Dam and dike design is largely based on statistical analysis of their many well-documented and catastrophic failures. This book dissects these breakdowns to help engineers prevent failures. It presents a framework and techniques for modelling structure failure events and proposes novel approaches for risk analysis and assessment using numerical, statistical, and constrained-based methods for breach modelling and flood water mitigation.

Catalog no. SW5944, January 2008, 142 pp., Soft Cover
ISBN: 978-0-415-45594-7, \$54.00 / £29.00



Innovations in Bridge Engineering Technology

Edited by

Khaled Mahmoud

Hardesty & Hanover, New York City, New York, USA

The Fourth New York City Bridge Conference featured an international array of distinguished bridge engineering experts who presented papers on the state-of-the-art innovations and remarkable technological advances achieved in bridge engineering technology. This valuable and insightful collection of contributions from that event covers a wide spectrum of issues ranging from design, maintenance, and rehabilitation methodologies to material and monitoring innovations.

Catalog no. SW5337, January 2008, 301 pp.
ISBN: 978-0-415-45337-0, \$144.95 / £74.00



Advances in Reliability and Optimization of Structural Systems

Edited by

Dan M. Frangopol

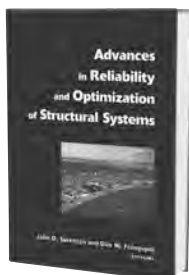
University of Colorado, Boulder, USA

John Dalsgaard Sorensen

Aalborg University, Denmark

This collection of 31 papers is based on presentations at an international conference to promote structural system reliability and optimization theory. With an emphasis on several types of bridges, it delves into methods for analyzing and modeling usage and potential deterioration. It addresses load concerns, density of traffic, seismic patterns, vibration tolerance and a number of issues essential to public safety.

Catalog no. SW9017, 2006, 306 pp.
ISBN: 978-0-415-39901-2, \$169.95 / £83.50



Structural Health Monitoring and Intelligent Infrastructure

Edited by

J.P. Ou, H. Li, and Z.D. Duan

Harbin Institute of Technology, China

This assembly of papers is derived from an international conference on advances, areas of potential international cooperation, and multi-disciplinary activities exploring smart sensors, advanced sensor networks, and integrated systems for structural health monitoring of intelligent infrastructures. Topics include real-time monitored data-based damage identification and localization, model updating, safety evaluation, reliability forecasting, damage control, maintenance and retrofit decision-making, and life-cycle performance-based design of infrastructures.

Catalog no. SW6522, 2006, 1760 pp.
ISBN: 978-0-415-39652-3, \$349.95 / £186.50



Underground Space Use Analysis of the Past and Lessons for the Future, 2-Volume Set

Edited by

Y. Erdem

Turkish Road Association, Istanbul, Turkey

T. Solak

General Directorate of Highways, Turkey

This showcase of presentations from international experts at a conference in Turkey covers various aspects of tunneling, from contract management to safety. Targeting professionals working with underground structures, geotechnics, and tunnel safety, the two-volume set reviews the state of the art in tunnelling, discusses recent research, and anticipates developments. It includes a CD-ROM of the proceedings.

Catalog no. SW4529, 2005, 1384 pp.
ISBN: 978-0-415-37452-1, \$449.95 / £229.50



Hydraulics of Spillways and Energy Dissipators

R.M. Khatsuria

Central Water and Power Research Station, Pune, India

An exploration of spillways and energy dissipaters, this text comprehensively covers advances in the field, including research and design. Drawing on the author's vast experience, it analyzes the large amount of data scattered in journals and proceedings, linking it with traditional information on various approaches, design procedures, and structure types.

Catalog no. DK1222, 2005, 680 pp.
ISBN: 978-0-8247-5789-2, \$219.95 / £120.00



Bridge Maintenance, Safety Management, and Life-Cycle Performance and Cost

Edited by

Paulo J.S. Cruz

Seoul National University, Korea Bridge Design & Engineering Research Center, South Korea

Dan M. Frangopol

University of Colorado, Boulder, USA

Luis C. Neves

University of Minho, Portugal

A major contribution to modern advances in bridge integrity in all aspects of bridge maintenance and safety, these papers examine advanced materials (including composites), assessment and evaluation of aging bridges, and bridge codes and diagnostics. Leading experts also cover bridge management systems, design for durability, deterioration modeling, field testing, and emerging technologies, as well as financial planning, sustainability, and whole-life costing. Technical and material concepts are addressed, as are non-destructive testing, optimization strategies, prediction of future traffic demands, and rehabilitation. With an accompanying CD-ROM to reinforce ideas, the text also discusses reliability and risk management, repair, replacement, residual service life, safety and serviceability. This insightful volume is a significant contribution to the decision making process in bridge maintenance.

Catalog no. SW3154, 2007, c. 1126 pp.

ISBN: 978-0-415-40315-3, \$289.95 / £147.00



Bridge Maintenance, Safety, Management and Cost

Edited by

E. Watanabe and T. Utsunomiya

Kyoto University, Japan

D.M. Frangopol

Lehigh University, Bethlehem, Pennsylvania, USA

Containing papers presented at the 2nd International Conference of the International Association for Bridge Maintenance, this book-and-CD-ROM set provides valuable insight from international experts to guide decisions regarding bridge maintenance, safety management and cost. This wide-ranging, informative book addresses a variety of topics, including assessment, evaluation, bridge codes, diagnostics, management systems, and durability, as well as deterioration modeling, emerging technologies, field testing, financial planning, and health monitoring. Contributors address high-performance materials, inspection, loads, maintenance strategies, and new technical and material concepts. They also discuss nondestructive testing, rehabilitation, reliability and risk management, and repair, in addition to replacement, safety and serviceability, service life prediction, strengthening, and whole life costing.

Catalog no. SW1643, 2005, 1004 pp.

ISBN: 978-90-5809-680-7, \$369.95 / £198.50



New!

Understanding Structures An Introduction to Structural Analysis

Mete A. Sozen

Purdue University, West Lafayette, Indiana, USA

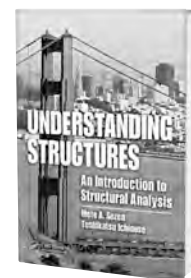
Toshikatsu Ichinose

Nagoya Institute of Technology, Japan

Today, a lack of understanding in structural mechanics has left the field vulnerable to high levels of risk. Employing a relaxed approach to learning, **Understanding Structures** provides a basic yet essential understanding of how buildings or bridges resist gravity, wind, or earthquake loads, to enhance design and construction of safe structures. This interactive textbook features companion GOYA software. Developed by the authors, GOYA was designed to improve understanding of structures through repetition, enabling students to use their intuition to solve problems of increasing complexity with relative ease. Ideal for self-study, the book presents numerous examples, case studies, solved problems, and a separate solutions manual. The text covers such topics as trusses, bending, frames, and buckling.

Catalog no. 6861X, July 2008, 368 pp.

ISBN: 978-1-4200-6861-0, \$99.95 / £44.99



Structural Analysis The Analytical Method

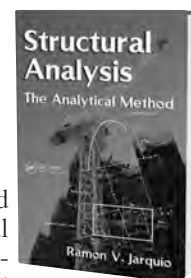
Ramon V. Jarquo

Engineering Consultant, Bayside, New York, USA

Introducing the new but generally overlooked capacity axis, this book illustrates analytical procedures for predicting the capacities of circular and rectangular sections in concrete and steel materials. The author demonstrates how the currently accepted method is ineffective and shows how to prove this condition using the straightforward approach of the analytical method. The book first discusses the capacities of rectangular and circular footing foundation for a given allowable soil-bearing pressure, then presents Boussinesq's elastic equation for the dispersion of surface loads in determining the exact average pressure to use in the standard soil settlement formula. Featuring all relevant equations and tabulated values readers require, this book presents an elegant, straightforward, and precise method that limits guesswork and makes it easier to confirm the adequacy and safety of designs.

Catalog no. 60236, January 2008, 240 pp.

ISBN: 978-1-4200-6023-2, \$129.95 / £71.99



New!

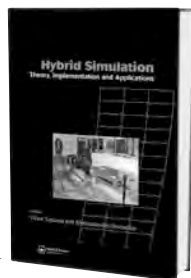
Hybrid Simulation Theory, Implementation and Applications

Edited by

Victor Saouma and Mettupulayam Sivaselvan
University of Colorado at Boulder, USA

The authors of this book explore rapidly evolving hybrid simulation technology, which combines computer simulation (typically finite element) and the physical laboratory testing of two complementary substructures. It describes this multidisciplinary technology's heavy reliance on control theory, computer science, and numerical techniques and then describes applications in aerospace, civil, and mechanical engineering.

Catalog no. SW5680, May 2008, 242 pp.
ISBN: 978-0-415-46568-7, \$109.95 / £59.00



Structural Design Optimization Considering Uncertainties

Edited by

Yiannis Tsompanakis
Technical University of Crete, Department of Applied Sciences, Greece

Nikos D. Lagaros
University of Thessaly, Department of Civil Engineering, Greece

Manolis Papadrakakis
National Technical University of Athens, School of Civil Engineering, Greece

These peer-reviewed contributions offer the latest findings on how to factor in uncertainties when optimizing structural design. Articles detail the use of probabilistic methods for the optimal design of different structures and apply various means to consider uncertainties. This book presents state-of-the-art theoretical yet cost-effective design advances and applications in civil, mechanical, naval, and aerospace engineering.

Catalog no. SW2600, March 2008, 656 pp.
ISBN: 978-0-415-45260-1, \$214.95 / £109.00



Modern Protective Structures

Theodor Krauthammer
University of Florida, Gainesville, USA

Tackling the analytical, design, assessment, and hazard mitigation issues associated with short-duration dynamic loads, this book examines how impulsive loads affect various types of structures. Explosives, nuclear explosions, loads on structures, and the behaviors of structural elements are discussed, as well as dynamic response and analysis, internal shock, impulse diagrams, progressive collapse, and protective design.

Catalog no. DK3186, February 2008, 528 pp.
ISBN: 978-0-8247-2526-6, \$139.95 / £73.99



Structural Dynamics Vibration and Systems

Edited by

Mamata Mukhopadhyay
Indian Institute of Technology, Bombay

Integrating vibration of mechanical systems and structural dynamics, this book introduces necessary fundamentals before moving on to more advanced concepts, providing numerous examples and reviews of the most useful computer software. Additional topics include system-free and system-forced vibration of multiple degrees of freedom, vibration analysis, and numerical methods in structural analysis.

Catalog no. AB7066, January 2008, 576 pp.
ISBN: 978-1-4200-7066-8, \$99.95 / £54.99



Collaboration and Harmonization in Creative Systems

Edited by

Takashi Hara
Tokuyama College of Technology, Japan.

This book contains 150 papers presented at ISEC-03 held in Japan. It includes work on creative structural and construction systems and materials, system integration and management, and innovative systems of collaboration with the environment. Overall, the text promotes the cooperation of information technologies in all facets of structural, system, and construction engineering to achieve environmentally sensitive and sustainable solutions.

Catalog no. SW0370, 2006, 1140 pp.
ISBN: 978-0-415-39037-8, \$339.95 / £175.00



Tubular Structures XI

Edited by

J.A. Packer and S. Willibald
University of Toronto, Department of Civil Engineering, Ontario, Canada.

Contributions from this symposium cover key subjects, such as applications/case studies, static and fatigue behavior of connections/joints, and concrete-filled/composite tubular members. They also discuss earthquake resistance, specification and code developments, material properties and fire resistance. This is an ideal reference for architects, civil and mechanical engineers, designers, fabricators, and contractors.

Catalog no. SW2808, 2007, 684 pp.
ISBN: 978-0-415-40280-4, \$259.95 / £134.50



Includes Software CD-ROM!

Design Analysis of Beams, Circular Plates and Cylindrical Tanks on Elastic Foundations Second Edition

Edmund S. Melerski

Formerly of the University of Tasmania, Australia

An updated and extended version of the first edition, this book outlines elastic numerical analyses and features solution techniques that incorporate a variant of the direct stiffness method, an energy-based finite difference approach, and a finite element method. It also includes a CD-ROM with Windows-based software for design analysis of related structures.

Catalog no. SW3501, 2006, 304 pp.

ISBN: 978-0-415-38350-9, \$124.95 / £62.50



Assessing Loads on Silos and Other Bulk Storage Structures Research Applied to Practice

Geoffrey Blight

University of the Witwatersrand, Johannesburg, South Africa

The culmination of more than 30 years of study of the design, examination, and behavior of bulk storage structures, this valuable reference covers everything from design through operational behavior, to failure and its prevention. It considers theories of stresses and strains in particulate materials, material testing, and evaluation to predict a structure's loads and behavior. It also includes methods for calculating loads and safety assessment.

Catalog no. SW2373, 2006, 225 pp.

ISBN: 978-0-415-39237-2, \$149.95 / £77.50



Shell Structures Theory and Applications

Edited by

W. Pietraszkiewicz

The Szezewski Institute of Fluid-Flow Machinery, Gdansk, Poland

C. Szymczak

Gdansk University of Technology, Poland

These papers drawn from a meeting of international specialists discuss shells, the basic structural elements of modern technology, as they relate to car bodies, domes, water and oil tanks, balloons, and even human skin. These proceedings detail important results and new ideas in the field to promote more accurate theoretical models and better methods of analysis and disseminate expertise in structures design and maintenance.

Catalog no. SW3900, 2006, 642 pp.

ISBN: 978-0-415-38390-5, \$249.95 / £127.50



Principles of Structural Design

Edited by

W.F. Chen

University of Hawaii, Honolulu, USA

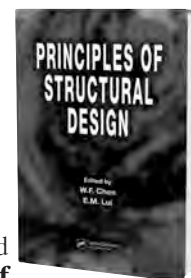
E.M. Lui

Syracuse University, New York, USA

This book integrates chapters from the second edition of the best-selling **Handbook of Structural Engineering** to provide a guide that zeroes in on the theoretical, practical, and computational aspects of structural design. Expert contributors discuss a wide variety of structures and materials, including steel, aluminum, timber, and prestressed concrete, as well as reliability-based design and structures based on wind engineering.

Catalog no. 7235, 2006, 528 pp.

ISBN: 978-0-8493-7235-3, \$99.95 / £53.99



Bestseller!

Handbook of Structural Engineering Second Edition

Edited by

W.F. Chen

University of Hawaii, Honolulu, USA

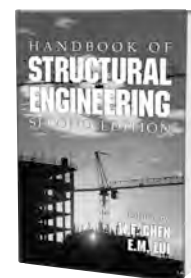
E.M. Lui

Syracuse University, New York, USA

Still a comprehensive reference for the broad spectrum of structural engineering, this new edition of a bestseller covers traditional and innovative approaches to analysis, design, and rehabilitation. It discusses fundamental theories of structural dynamics, advanced analysis, and wind- and earthquake-resistant design. It also discusses design of prestressed structures, high-performance steel, concrete- and fiber-reinforced polymers, semi-rigid frame structures, structural bracing, and fire safety design.

Catalog no. 1569, 2005, 1768 pp.

ISBN: 978-0-8493-1569-5, \$169.95 / £92.00



Improvement of Buildings' Structural Quality by New Technologies Final Report September 2004

Edited by

Christian Schauer

Schauer ZTGMBH, Thaur, Austria

About 100 scientists from 21 countries contributed to the assembled works in this volume, which focus on development, integration, and dissemination of technical engineering technologies to improve the quality of urban buildings. Presenting technical solutions for architects and planners, it aims to reduce urban disturbance caused by construction, to improve quality of life.

Catalog no. SW6100, 2005, 624 pp.

ISBN: 978-0-415-36610-6, \$229.95 / £119.00



Eigenvalues of Inhomogeneous Structures Unusual Closed-Form Solutions

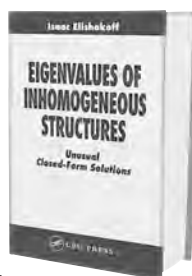
Isaac Elishakoff

Florida Atlantic University, Boca Raton, USA

This treatment of closed-form solutions for semi-inverse eigenvalue problems offers closed-form solutions for eigenfrequencies and buckling loads of bars, beams, and plates. The exact solutions in this book have applications that allow for the design of tailored and/or functionally graded structures. Mechanical, aerospace, civil, and marine engineers will appreciate this comprehensive review.

Catalog no. 2892, 2005, 752 pp.

ISBN: 978-0-8493-2892-3, \$129.95 / £68.99



Exact Solutions for Buckling of Structural Members

C.M. Wang

National University of Singapore, Kent Ridge

C.Y. Wang

Michigan State University, East Lansing, USA

J.N. Reddy

Texas A&M University, College Station, USA

This text answers the additional need for analytical solutions to complement numerical methods for study of buckling loads in designing structural elements. Engineers and researchers can use the exact buckling solutions presented to assess reliability and accuracy. These buckling solutions of columns, beams, arches, ring plates, and shells are benchmarks for checking validity, convergence, and accuracy.

Catalog no. 2222, 2005, 207 pp.

ISBN: 978-0-8493-2222-8, \$149.95 / £79.99



Materials and Corrosion Prevention

Steel and Composite Structures

Edited by

Y. C. Wang

University of Manchester, UK

C.K. Choi

Korean Advanced Institute of Science and Technology, Daejeon, South Korea

This presentation of more than 150 international papers covers steel constructions, buckling and stability, control, fatigue and fracture, fire, and impact. It also discusses joints, maintenance, plates and shells, retrofitting, and seismic construction, as well as space structures, steel, structural analysis, structural components and assemblies, thin-walled structures, vibrations, and wind. A special session is dedicated to codification.

Catalog no. SW5141, January 2008, 1097 pp.

ISBN: 978-0-415-45141-3, \$319.00 / £169.00



Steel-Reinforced Concrete Structures Assessment and Repair of Corrosion

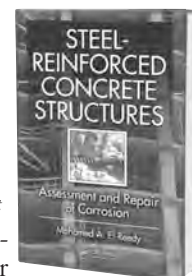
Mohamed A. El-Reedy

Engineering Consultant (oil & gas industry), Giza, Egypt

The widespread and long-term use of reinforced concrete makes its correct and proper examination, maintenance, and repair paramount. This practical guide to concrete structure maintenance covers the corrosion of steel in concrete and discusses practical techniques for protecting steel reinforcement and for repairs after corrosion begins. Breaking down the corrosion phenomena, the author includes precautions that can be taken in the construction stage to mitigate it. Stressing the importance of implementing integrity management systems for maintenance strategies, the author offers theoretical and practical approaches to diagnose corrosion, protect steel reinforcement, and select an appropriate method of repair.

Catalog no. 54309, January 2008, 216 pp.

ISBN: 978-1-4200-5430-9, \$129.95 / £71.99



Strength of Materials

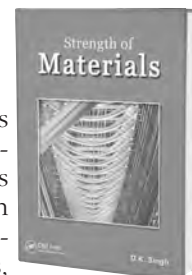
D.K. Singh

Netaji Subhas Institute of Technology, New Delhi, India

Ideal for civil and mechanical engineers, this book covers combined stresses, the calculation of centroid and the moment of inertia, as well as shear forces and bending moments in beams. It also discusses stresses in and deflection of beams, torsion of circular members, springs, strain energy, the theory of elastic failure, buckling of columns, pressure vessels, and the analysis of framed structures.

Catalog no. AB6916, January 2008, 518 pp.

ISBN: 978-1-4200-6916-7, \$119.95 / £65.99



Reinforced Concrete Design with FRP Composites

Hota V.S. GangaRao and P.V. Vijay

West Virginia University, Morgantown, USA

Narendra Taly

California State University, Los Angeles, USA

This reader-friendly work presents specifics for designing concrete structures with fiber reinforced polymer (FRP) composites as a substitute for steel reinforcement and use of FRP fabrics to strengthen concrete members. Featuring practical examples, the authors examine the design, durability, and serviceability – as well as analysis of – reinforced members. They also consider fundamental theories of concrete member behavior under different loading conditions and ACI-recommended design approaches.

Catalog no. DK8293, 2007, 400 pp.

ISBN: 978-0-8247-5829-5, \$149.95 / £79.99



Computational Modelling of Concrete Structures

Edited by

Gunther Meschke, René de Borst,
Herbert Mang, and Nenad Bicanic

Leading researchers and engineers contributed to this reference on computational modelling of complex concrete structures, reinforced concrete and prestressed concrete structures in engineering practice. Subjects include computational mechanics of concrete and other cement materials, and advanced discretization methods and micro-structural aspects within multi-field and multi-scale settings. Modelling formulations and frameworks and novel experimental programs are also discussed.

Catalog no. SW7499, 2006, 942 pp.

ISBN: 978-0-415-39749-0, \$339.95 / £177.50



New!

Strengthening and Rehabilitation of Civil Infrastructures Using Fibre-Reinforced Polymer (FRP) Composites

Edited by

Len C. Hollaway and Jin Guang Teng
The Hong Kong Polytechnic University, China

The repair of deteriorated, damaged and substandard civil infrastructures has become one of the most important issues for the civil engineer worldwide. This important and valuable reference guide discusses the use of externally-bonded fibre-reinforced polymer (FRP) composites to strengthen, rehabilitate and retrofit civil engineering structures, covering such aspects as material behavior, structural design, and quality assurance.

Catalog no. WP8774, August 2008, 350 pp.

ISBN: 978-1-4200-8774-1, \$259.95 / £137.00



Self-Compacting Concrete

Edited by

Geert De Schutter, Peter J.M. Bartos,
Peter Domone, and John Gibbs

During the last decade, concrete technology has greatly advanced through the introduction of self-compacting concrete (SCC). This book defines the key properties that make fresh concrete self-compacting and outlines test methods to assess it. Covering basic principles and underlying scientific theory, practical production advice, and construction use, it reviews the entire SCC production process, from material selection, mix design and process to transport, placing and finishing, and health and safety.

Catalog no. WH6833, June 2008, 288 pp.

ISBN: 978-1-4200-6833-7, \$149.95



New!

Novel Approaches to Improving High Temperature Corrosion Resistance

Edited by

M. Schütze

*Society for Chemical Engineering and Biotechnology,
Germany*

W.J. Quaddackers

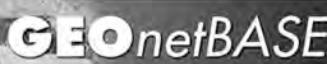
Institute of Energy Research at the Forschungszentrum, Germany

The problem of high-temperature corrosion affects sectors such as the power generation, aerospace, and metal-working industries. This book summarizes ways of modifying alloys to improve their resistance to it. It discusses surface pre-treatments and coatings, research on testing for resistance, and the development of common testing standards. The book also reviews research on alloy behavior in various environments, and ways to process models for improving material performance and service life.

Catalog no. WP7959, June 2008, 648 pp.


ISBN: 978-1-4200-7959-3, \$289.95 / £153.00





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